

12

EUROPEAN PATENT APPLICATION

21 Application number: 83106397.9

51 Int. Cl.³: **G 05 G 9/02**
E 05 B 53/00

22 Date of filing: 30.06.83

30 Priority: 07.07.82 JP 119045/82

43 Date of publication of application:
22.02.84 Bulletin 84/8

84 Designated Contracting States:
DE FR GB

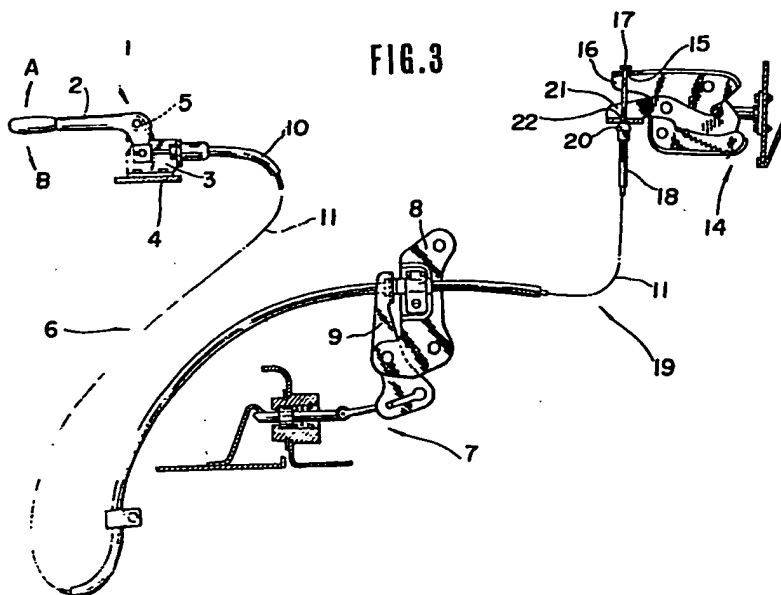
71 Applicant: **NISSAN MOTOR COMPANY, LIMITED**
No.2, Takara-cho, Kanagawa-ku
Yokohama-shi Kanagawa-ken 221(JP)

72 Inventor: **Mochida, Haruo**
1104-41, Susugaya Kiyokawa-mura
Akio-gun Kanagawa Prefecture(JP)

74 Representative: **Patentanwälte Grünecker, Dr.**
Kinkeldey, Dr. Stockmair, Dr. Schumann, Jakob, Dr.
Bezold, Meister, Hilgers, Dr. Meyer-Plath
Maximilianstrasse 58
D-8000 München 22(DE)

54 Remote control device.

57 The endmost latch mechanism of two units controlled by an actuating mechanism is connected to the "single" Bowden cable arrangement thereof in a manner that the inner wire of the cable is connected to a stationary member of the latch, while the movable member thereof is operated by movement of the outer flexible housing of the cable.



0100855

E-1139

-1-

PATENTANWÄLTE
GRÜNECKER · DR. KINKELDEY · DR. STOCKMARR
DR. SCHRAMM · JAKOB · DR. BEZOLD · MEISTER
HILGERS · DR. MEYER-PLATH
MAXIMILIANSTR. 58 · 8000 MÜNCHEN 22

REMOTE CONTROL DEVICE

BACKGROUND OF THE INVENTIONField of the Invention

5 The present invention relates generally to a device which can operate two separate mechanisms and more specifically to a device where the outer housing member of a Bowden cable is used to operate a mechanism in lieu of the inner cable.

Description of the Prior Art

10 In an arrangement disclosed in European Patent Application Publication No. 81100054.6 published on 22.07.81, in order to overcome the inherent difficulty in operating a mechanism by pushing the inner wire of
15 a Bowden cable, it has been proposed to operate one mechanism by using the outer flexible housing of the cable and the second by pulling the inner wire or strand. However, this arrangement has suffered from the unexpected drawback that when it is desired to
20 arrange the mechanism as shown in Fig. 2, wherein the gasoline filler cover (for example) is located on the opposite side of the vehicle as compared with the arrangement shown in Fig. 1, in order to utilize exactly the same apparatus, it has been necessary to
25 bow or curve the section of the Bowden cable between

-2-

the two lock mechanisms as shown (in solid line).
This curving has induced an undesirable resistance to
movement of the inner wire and further posed a problem
in that it is difficult to locate the curved portion
5 of the cable in the restricted environment of the rear
end of the vehicle.

SUMMARY OF THE INVENTION

It is an object of the present invention to
provide an arrangement wherein the same apparatus as
10 used in the prior disclosed arrangement is used but
the drawbacks inherent therewith eliminated.

The present invention is based on the discovery
that, quite contrary to the previously proposed
arrangement wherein an excess of cable is forced into
15 the fixed length of outer housing disposed between the
manually operable device and a remotely disposed
mechanism so that the outer member tends to buckle and
"shrink" back along the inner wire in a manner to
operate a lever or the like to which it is attached,
20 it is in fact possible to pull a length of inner wire
out of a predetermined length of outer housing whereby
the outer member tends to "move along" the inner cable
in an attempt to "ingest" the deficit of inner wire
and thus move in a manner which can be used to operate
25 a remotely disposed mechanism.

-3-

This discovery dispells the incumbering previous preconception that the inner wire would "naturally" have to be used to pull a movable of the nature found in the endmost latch mechanism disclosed in the previously mentioned publication and that the attachment of the inner wire to a stationary member would render the device unworkable.

This therefore renders it possible for both of the flexible outer members of the sections of the "single" Bowden type cable utilized in the previously mentioned prior disclosed arrangement which are located between the mechanisms associated therewith to be used to operate both of the latch mechanisms and allow for exactly the same apparatus as used in the prior disclosed arrangement to be used but in an arrangement wherein the outer of cable is connected to a movable member of the endmost mechanism while the inner wire is connected to a stationary member thereof.

The economy of parts which may be realized through this invention will of course be readily apparent. For example, the invention allows for the same apparatus to be used in both left and right hand drive vehicles and/or different vehicles merely by way of changing the manner of connection between the inner and outer members of the cable.

-4-

More specifically, the invention features a remote control arrangement which comprises a manually operable actuating mechanism, a first device operatively interconnected with the actuating
5 mechanism by a first section of Bowden cable having an inner wire and a flexible outer housing disposed thereabout and a second device operatively interconnected with the first device by a second section of Bowden cable having an inner wire and a
10 flexible outer housing, wherein the inner wires of the first and second sections of Bowden cable are defined by a single strand which is connected at one end to the actuating mechanism so as to be movable thereby in first and second directions toward and away from the
15 actuating mechanism respectively, and which is further operatively connected at the other end to a stationary member of the second device, and wherein the flexible outer housing of the second section of Bowden cable is operatively connected with a movable
20 member of the second device for operating the second device upon the single strand being moved in the first axial direction.

BRIEF DESCRIPTION OF THE DRAWINGS

The features and advantages of the arrangement of
25 the present invention will become more clearly

-5-

appreciated from the following description taken in conjunction with the accompanying drawings in which:

Fig. 1 is a schematic plan view showing the disposition of the arrangement disclosed in European Patent Application Publication No. 81100054.6 within a vehicle;

Fig. 2 is a plan view similar to that of Fig. 1, but showing the prior disclosed arrangement disposed in a vehicle wherein the gasoline filler cap (for example) is provided on the right hand side of the vehicle and which shows in (solid line) the curving of the end section of Bowden cable which is inherently required with the prior disclosed arrangement and the meritorious simplification (shown in broken line) which can be achieved via application of the present invention.

Fig. 3 is a view partially in section which shows an embodiment of the present invention; and

Fig. 4 is a front elevation showing the arrangement of the lock mechanism located closest to the manually operable control or actuating mechanism.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Turning now to Figs. 3 and 4 a preferred embodiment of the present invention is shown. In this arrangement a manually operable actuating mechanism 1

-6-

is provided with a lever 2 which is pivotally mounted on a bracket 3 connected to the chassis 4 of a vehicle (for example). This lever 3 is biased to a home or rest position by a spring 5 and is arranged to be
5 pivotally in both directions (viz., A and B) from the rest position. A first section of Bowden cable 6 extends between the actuating mechanism 1 and a lock mechanism 7. This lock mechanism 7 as best seen in Fig. 4, includes a base plate 8 and a lever 9
10 pivotally mounted thereon. In this arrangement the flexible outer member 10 of the first section of Bowden cable 6 is connected to the lever 9 while the inner wire or strand 11 is arranged to slidably pass through a member 12 in which a stepped bore 13 is
15 formed and continue on to another lock mechanism 14. A bead or stopper 15 is fixed to the wire 11 and arranged to abut the end of the stepped bore 13 upon the wire being moved axially in a direction away from the manually operable actuating mechanism 1 toward the
20 remotest (14) of the two lock mechanisms (7, 14) and slide freely back toward the actuating mechanism 1 when the wire 11 is pulled theretoward. The operation of this arrangement is such that upon the wire 11 being moved away from the actuating mechanism 1 the
25 stopper 15 engages the end of the stepped bore 13 with

-7-

the result that the outer member 10 tends to have an excess of wire 11 inserted thereinto and accordingly buckles in a manner to move back along the inner wire 11 and pull the lever 9 in the counter clockwise direction. Coversely, upon the inner wire 11 being drawn toward the actuating mechanism 1 the stopper 15 merely slides in the bore 13 and the lever 9 remains in the illustrated position.

The endmost portion of the inner wire 11 is disposed through an aperture 15 formed in a stationary bracket 16 fixed to the chassis 4, and provided with a bead 17 which limits the movement of the wire 11 in the direction of the actuating mechanism 1 but allows same to move freely through the aperture 15 in when the wire 11 is moved toward the endmost lock mechanism 14 by the mechanism 1. The flexible outer member 18 of the section of Bowden cable 19 defined between the intermediate lock 7 and the endmost lock 14 is provided in this case with a rounded end portion 20 which abuts against a lever 21 pivotally mounted on the stationary bracket 16. This lever 21 is formed with an aperture 22 through which the inner wire 11 passes.

The operation of this arrangement is such that when the wire 11 is moved toward the endmost lock 14

-8-

the wire 11 simply slides through the apertures 15, 22 and the latch or lock mechanism 14 remains in the illustrated position (viz., locked). However, upon the wire 11 being drawn toward the actuating mechanism

5 1 the amount of inner wire 11 contained within the flexible outer member 18 tends to decrease and the outer member 18 moves along the inner wire 11 in an attempt to make up the loss. Consequently, the outer member 18 abuts against the lever 21 and rotates same

10 in the clockwise direction to release the latch. It will of course be appreciated that the section of Bowden cable 19 defined between the locks 7, 14 must be slightly curved in order to permit the slight straightening of same which will accompany the

15 movement thereof in the above mentioned lock releasing direction.

20

25

WHAT IS CLAIMED IS:

1. A remote control arrangement comprising:

a manually operable actuating mechanism;

a first device operatively interconnected with said actuating mechanism by a first section of Bowden cable having an inner wire and a flexible outer housing disposed thereabout;

a second device operatively interconnected with said first device by a second section of Bowden cable having an inner wire and a flexible outer housing disposed thereabouts;

said inner wires of said first and second sections of Bowden cable being defined by a single strand which is connected at one end to said actuating mechanism so as to be movable thereby in first and second directions toward and away from said actuating mechanism respectively, and which is further operatively connected at the other end to a stationary member of said second device,

said flexible outer housing of said second section of Bowden cable being operatively connected with a movable member of said second device for operating said second device upon said single strand being moved in said first axial direction.

2. A remote control arrangement as claimed in claim 1, wherein the operative connection between said single strand and said stationary member is such as to permit the movement of said wire in said second axial direction and limit the movement thereof in said first axial direction.

3. A remote control device as claimed in claim 1 wherein said flexible outer housing of said second section of Bowden cable is adapted to abut against the movable member of said second device in a manner to move same when said single strand of wire is moved in said second axial direction.

4. A remote control arrangement as claimed in claim 1, wherein said single strand is formed with a stopper which engages a stationary member of said first device when said single strand is moved in said second axial direction, and wherein said flexible outer member of said second first section of Bowden cable is connected to a movable member of said first device for operating same when said single strand is moved in said first axial direction.

-11-

5. A remote control arrangement comprising:

a first mechanism;

a second mechanism;

a wire operatively connected at one end to a stationary member of said second mechanism and which is slidably disposed through said first mechanism;

an actuating mechanism having a stationary member and a lever operatively connected to the other end of said wire for selectively moving said wire in first and second axial directions;

a stopper fixed to said wire and arranged to abut a stationary member of said first mechanism when said wire is moved in said second axial direction;

a first flexible housing disposed about said wire between said actuating mechanism and said first mechanism, said first flexible housing being operatively connected to said first mechanism and arranged to operate same when said wire is moved in said second axial direction;

a second flexible housing disposed about said wire between said first and second mechanisms, said second flexible housing being operable connected to a movable member of said second mechanism, said second mechanism being operated by movement of said second flexible housing when said wire is moved in said first axial direction.

FIG.1

1/2

FIG.2

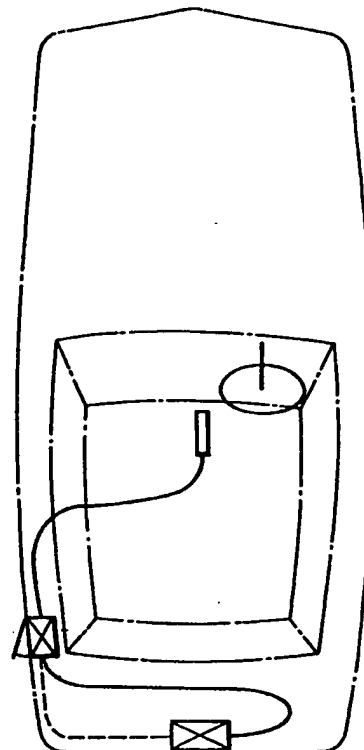
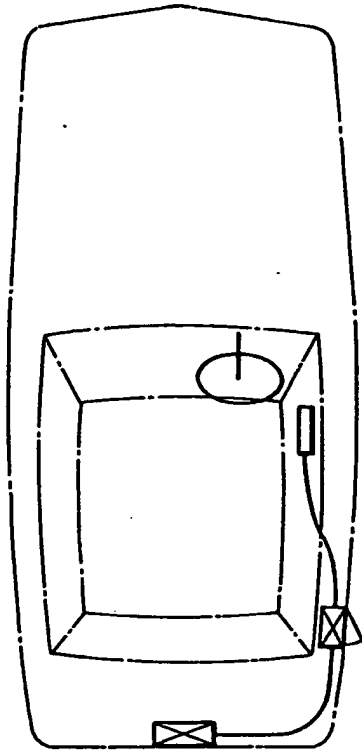
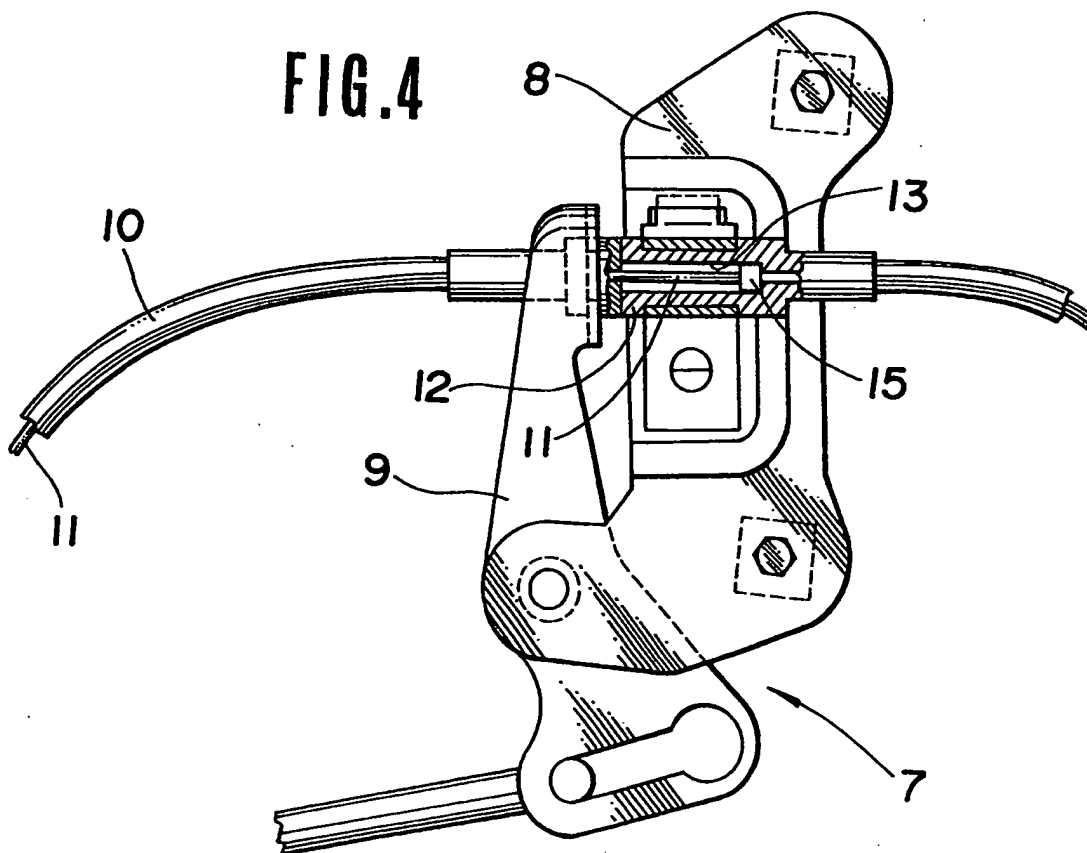
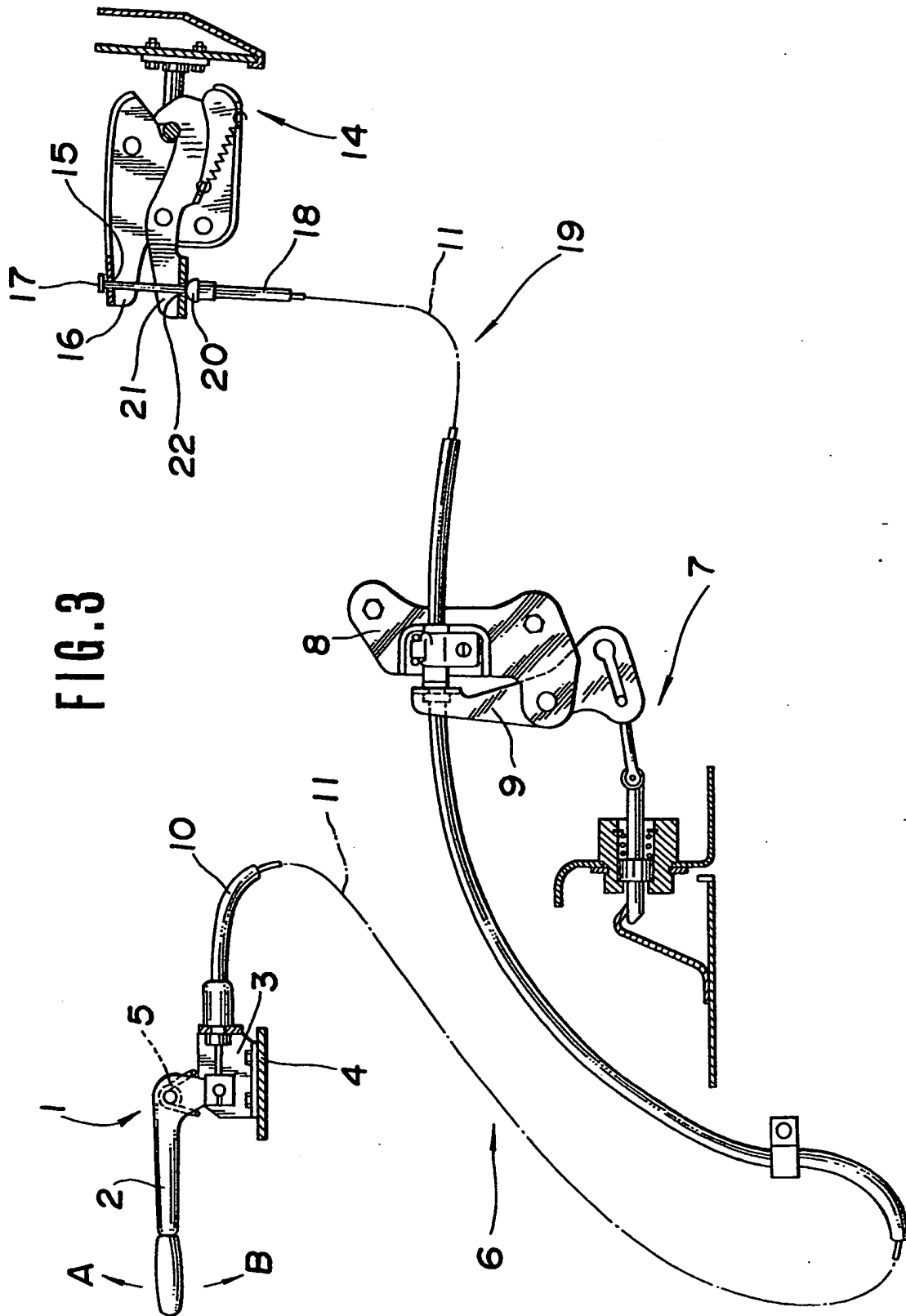


FIG.4



2/2





DOCUMENTS CONSIDERED TO BE RELEVANT			EP 83106397.9
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 7)
D,P	EP - A1 - 0 032 378 (NISSAN MOTOR COMP. LIMITED) * Totality * --	1-5	G 05 G 9/02 E 05 B 53/00
A	GB - A - 2 039 319 (OHI SEISA-KUSHO CO. LTD.) * Abstract; fig. 1-7 * --	1-5	
A	US - A - 2 480 083 (A. MC MILLAN) * Fig. 1-3 * --	1,5	
A	GB - A - 1 582 435 (KONTAK MANUFACTURING COMP. LTD.) * Totality * --	1,5	
A	DE - A1 - 1 575 679 (A. TEVES GMBH) * Claim 1; fig. 1 * -----	1,5	TECHNICAL FIELDS SEARCHED (Int. Cl. 7) E 05 B 53/00 E 05 B 65/00 E 05 C 13/00 F 16 C 1/00 G 05 G 9/00
The present search report has been drawn up for all claims			
Place of search VIENNA		Date of completion of the search 21-10-1983	Examiner ROUSSARIAN
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☒ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.